

Accessibility and completeness of electronic medication lists (eML) within the newly established electronic health records in Germany – reconciliation by comparison of eML with prescription and supply records of a community pharmacy

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BACKGROUND

Electronic medication lists (eML) as part of the electronic health record (EHR) were established throughout Germany in January 2025. eML are chronologic lists of all electronically prescribed medicines and are accessed by inserting patients' electronic insurance cards (eIC) into a card terminal at the pharmacy.

However, paper prescriptions are not included in the eML. Also, patients can opt-out of the EHR entirely or block access to the eML in particular. Thus, one of the aims of the eML, i.e. improving medication safety, might be compromised by inaccessibility or missingness of medication data.

PURPOSE

Primary objective:

To determine

- a) the proportion of patients with accessible eML
- b) completeness of eML and prescription and supply records (PSR) in direct comparison.

Secondary objective:

To identify

- a) in the eML: numbers of prescribers, prescriber consultations, dispensing pharmacies, (different) prescribed drugs;
- b) in the PSR: paper prescriptions, and purchase of OTC drugs.

METHOD

Randomised cross-sectional study during one month, starting seven months after inception of the eML

Sampling frame: all patient encounters involving one or more electronic prescriptions („case“) for patients aged ≥ 18 years

Sample size (CI 95%| 5%) is 319 cases with both eML and PSR randomly selected between 11.08.-08.09.2025

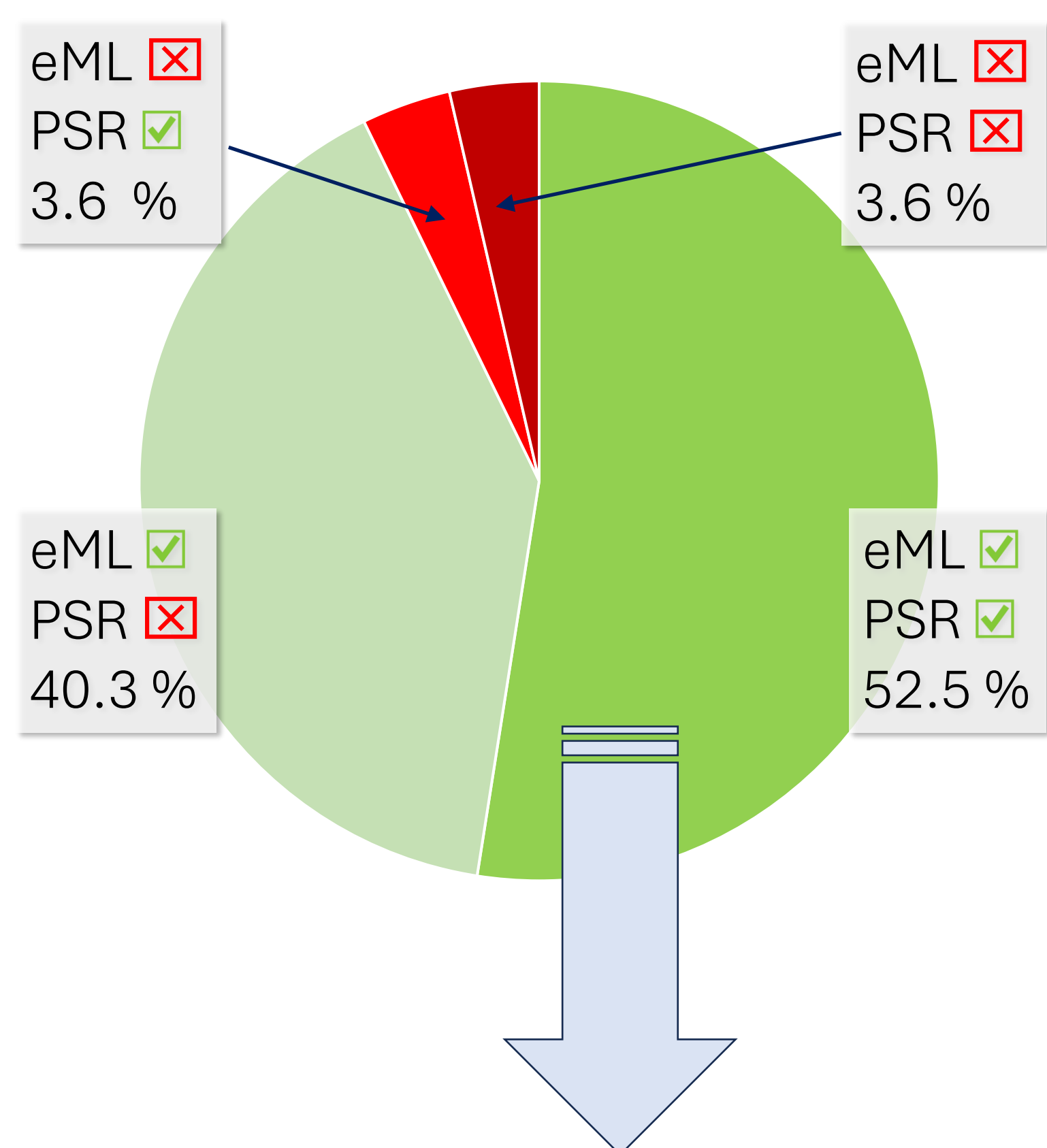
Setting: one community pharmacy (Hamburg, Germany)

Data extraction: manually for all entries since 01-2025

Data base: eML within the nationwide EHR; PSR within IXOS® (Pharmatechnik)

Analysis: descriptive statistics using Microsoft Excel®

FIG. 1: ACCESSIBILITY OF eML AND PSR



FINDINGS

665 cases were analysed. On average, patients were 64 ± 18 years old. Since January 2025 patients had 8.1 ± 5.0 contacts (range 1-29) with 3.2 ± 1.9 prescribers (1-11) and filled 14.2 ± 10.4 prescriptions (1-57) in 2.0 ± 1.3 pharmacies (1-7). Patients received on average 7.2 ± 4.8 different drugs (1-31). A „typical patient“ had five visits at two prescribers, filled five prescriptions in one pharmacy and received a polymedication consisting of five different drugs [Tab 1]. The eML was accessible in 617 (92.8%) cases. 349 (52.5%) patients had both an

eML and a PSR [Fig 1]. Of this subgroup 227 (64.7%) eML and 242 (69.0%) PSR were complete in naming at least once every active ingredient which was listed in the respective other file [Fig 2]. Two thirds (n=160) of patients with complete eML had purchased OTC. These may be relevant for medication safety and ought to be included in medication reconciliation. As OTC are not listed in the eML, only in 67 (19.2%) patients, the eML represented their entire medication [Fig 3]. Patients with a higher drug burden or polypharmacy had more often a PSR [Fig 4].

DEFINITION

The eML was defined as „complete“ when it contained each prescription drug (as active ingredient & strength) listed in the PSR at least once. Vice versa for completeness of the PSR.

TABLE 1: CHARACTERISTICS OF PATIENTS AND THEIR MEDICATIONS

Parameter	Average	SD	Median	Mode	Range
Patients' age	63.89	18.15	66	82	18-99
N° of prescribers	3.19	1.87	3	2	1-11
N° of contacts with prescribers	8.07	5.02	7	5	1-29
N° of prescriptions	14.24	10.43	12	5	1-57
N° of pharmacies visited	2.04	1.30	2	1	1-7
N° of different drugs in eML	7.25	4.81	6	5	1-31

FIG. 2: COMPLETENESS OF eML AND PSR

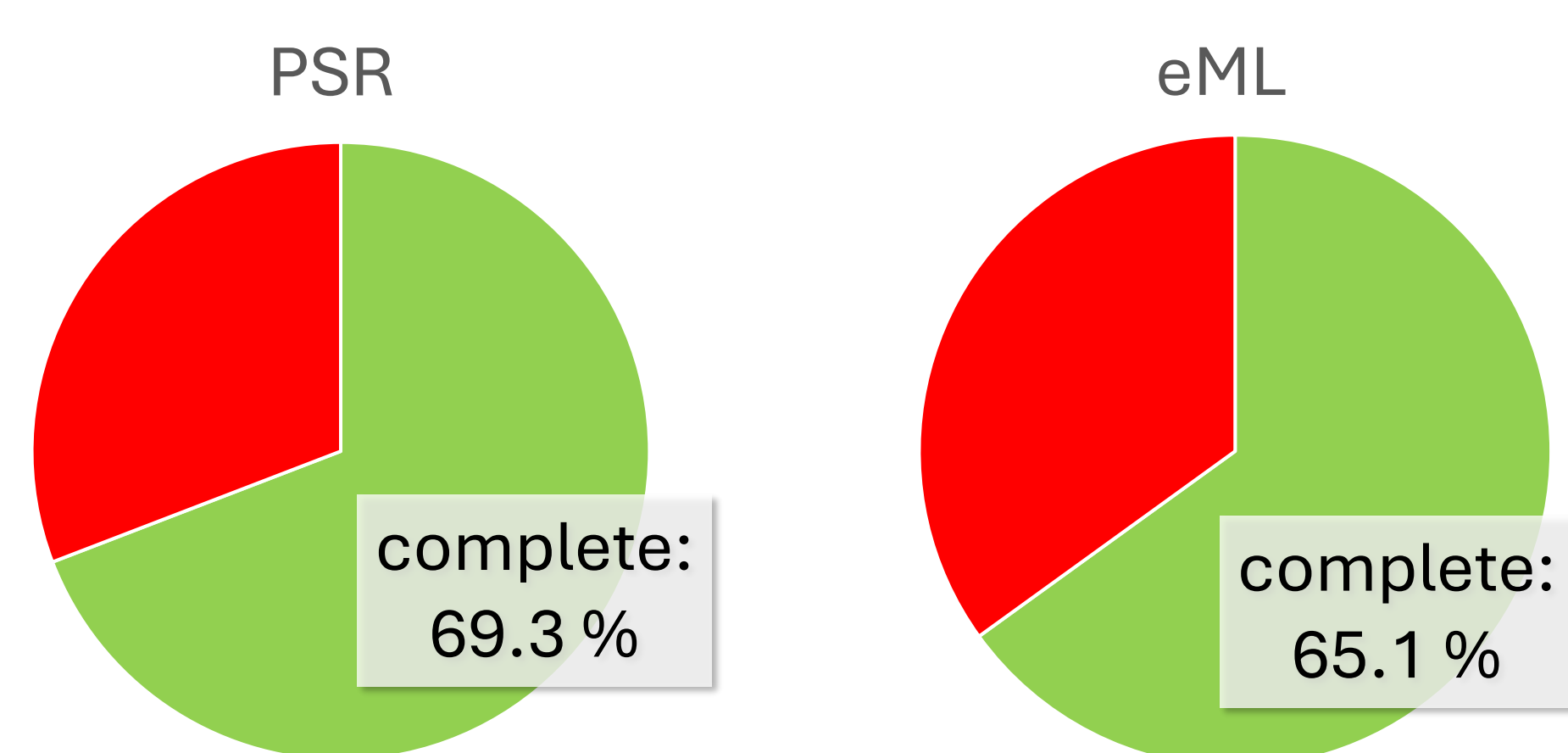


FIG. 3: PURCHASE OF OTC

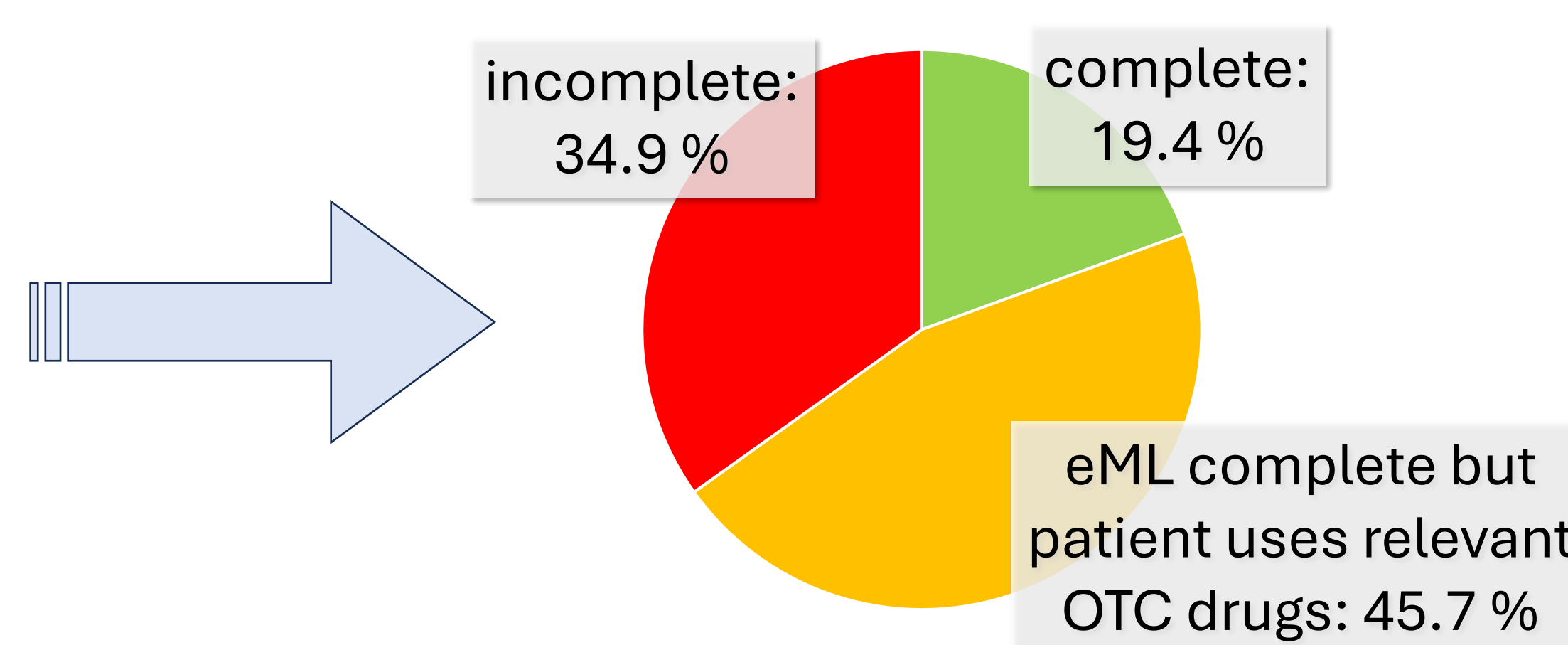
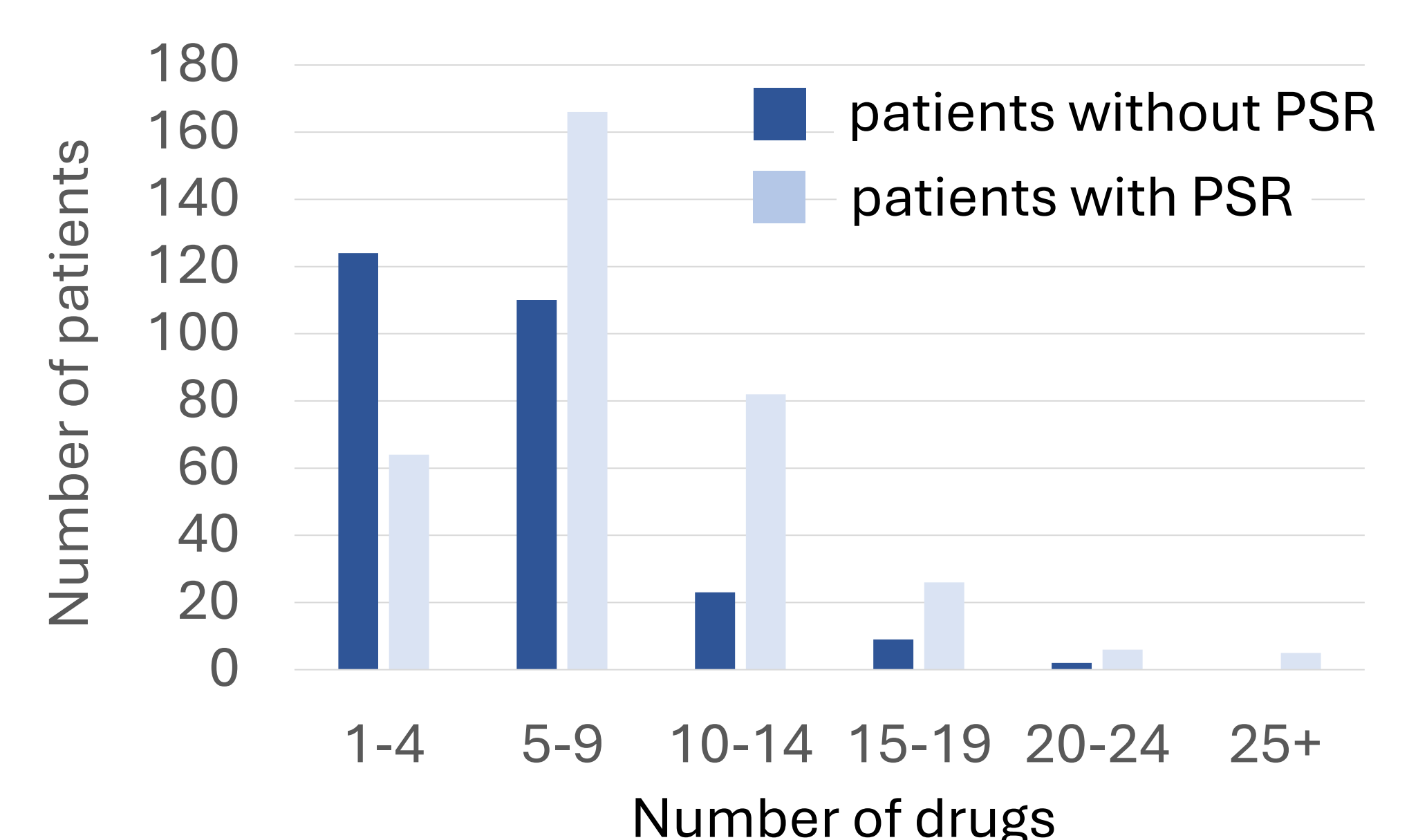


FIG. 4: NUMBER OF DIFFERENT DRUGS, POLYPHARMACY & PSR ACCORDING TO eML



Which drugs were missing in the eML?

e.g. compulsory paperbound prescriptions: controlled drugs (opioids, CNS stimulants), teratogenic drugs. Weight loss drugs, vitamins, levothyroxine, citalopram, amitriptyline, opipramol, quetiapine, benzodiazepines, Z-drugs, pantoprazole, RAAS-inhibitors, betablockers, metformin, statins, tilidine, prednisolone, antibiotics, anticoagulants, methotrexate, epinephrine pens ...

Which OTC drugs were frequently purchased?

- aspirin 100 mg
- NSAIDs
- pantoprazole, laxatives, loperamide
- vitamin D
- eye drops
- OTC for cough relief, UTI, sedatives

Overall, 69.5% of patients had ≥ 5 drugs in their eML. 81.7% of patients with PSR used ≥ 5 different Rx drugs. 53.7% of patients without PSR used ≥ 5 different Rx drugs.

CONCLUSION

In this study only 64.7% of eML were complete for Rx drugs according to a definition (see box above) chosen for its usability in medication safety checks. A limitation of this study is that additional paper prescriptions could

have been filled in other pharmacies. Thus, the percentage of complete eML might be even lower. OTC are not added to the eML even when relevant for medication safety checks, increasing missingness of data. While the

eML holds the chance to improve medication safety it cannot replace the thorough medication reconciliation provided by the pharmacist's in-person interview with the patient.

FUNDING: The study was partly funded by the Förderinitiative für Pharmazeutische Betreuung e.V.

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